Flexible Form Factor Radiation Monitor

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The official link for this solicitation is:
https://www.fbo.gov/download/501/501d0c06272854877d88e1c12194f43c/Amend_1_SOL.pdf

Agency:
Department of Homeland Security

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Domestic Nuclear Detection Office

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Description:

OBJECTIVE: Develop a radiation sensor to support search operations that has a variable or flexible form factor than current systems. The device(s) should be more sensitive, lower-cost, more be specific than current COTS approaches.

DESCRIPTION: Certain scenarios involving the search or surveillance for nuclear or radiological materials of concern are best accomplished with a radiation monitoring device that can be flexibly employed depending the mission, environment, and performance required of the device. An example would be a linear radiation monitor that affords neutron and gamma detection in a linear array up to 80 feet in length. These types of devices support monitoring in hard to reach locations, and can be tailored for use in different applications in various operating environments. The device(s) to be developed should have the following features: nominal weight and volume, modular design, readily stored and transported, and be man portable. Ideally, the proposed device(s) will provide high sensitivity for both neutron and gamma radiation along its length and/or across a large effective area, provide an indication as to where detected radiation is strongest, provide gamma spectroscopic information to allow high confidence nuclide identification, and be sensitive to neutrons without dependence on helium-3. The line radiation monitor must achieve measures of suitability that include highly rugged for deployment in harsh environments, battery operation, and reasonable cost. Flexible verses rigid designs are preferred. Potential applications to consider for the device(s) include the following: search of hard to reach locations in vessels, vehicles or cargo, man-

portable mobile search and monitoring operations, impromptu portal monitoring operations, and potentially many others.

PHASE I: Demonstrate the feasibility of the proposed technical approach with adequate combination of experimental data, calculations, results, simulations, as appropriate to provide a compelling argument for success. Provide information as to how this concept will be commercialized following a Phase II award.

PHASE II: Produce and test a proof-of-concept prototype to demonstrate the viability and capabilities of the neutron detector. Demonstrate a commercialization path. In addition to Phase II funding, there is an established cost-match program with the opportunity for an additional funding. This cost-match funding mechanism is available for performers that would secure commercialization funding from third parties. See section 4.6 of the solicitation announcement for more information.

PHASE III: Commercial Applications - In addition to homeland security applications (U.S. Customs, U.S. Coast Guard), these would be of benefit to the Department of Defense, the Department of Energy, and the International Atomic Energy Agency.